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GENERAL NOTES.

New Publication.—A new astronomical publication has appeared on the Pacific Coast under the title *Publications of the Astronomical Society of Pomona College.* Number 1, volume 1, appeared in June of this year, and contains twenty-four pages of interesting reading on various topics, some of which are quite local, as might perhaps be expected from the name of the publication. Professor F. P. BRACKETT is president of the Society and editor-in-chief of the *Publications.* A photograph of the Moon, taken with the horizontal telescope of the F. P. Brackett Observatory, is used for a frontispiece. Very little in the way of detail can be made out, but it was, perhaps, not intended that details should be there. The new publication is to be issued in October, December, February, April and June, and the subscription price is $1.50 per year.

Comet Notes.—Since the last issue of these *Publications* two new comets have been discovered, one by Mr. C. C. KIESS, photographically, at the Lick Observatory on July 6th, and the other by Dr. W. R. BROOKS at the Smith Observatory, Geneva, N. Y., on July 20th. The former is Comet *b* 1911 and the latter Comet *c* 1911. The orbit and an ephemeris of Comet *b* may be found in another part of these *Publications.* Neither comet seems likely to become brilliant, although Comet *b* may be bright enough to be seen without a telescope during the first half of August if the moonlight does not interfere.

Solar Eclipse.—Several English and Australian parties were sent out to the islands of the Friendly Group to observe the total solar eclipse of April 28th. Unfavorable weather prevailed at nearly all the stations and the results obtained were rather disappointing. Some interesting letters concerning the eclipse and the voyages to and from the path of totality were published in *Nature* during May and June. They were from the pen of Dr. W. J. S. LOCKYER, in charge of the expedition from the Solar Physics Observatory.

Williamina Paton Fleming. — Mrs. WILLIAMINA P. FLEMING, curator of astronomical photographs at the Harvard College Observatory, was born in Dundee, Scotland, on May 15, 1857, and came to this country soon after her marriage in early womanhood. She soon drifted into the work which was destined to occupy her life, by undertaking some simple astronomical calculations at the Harvard Observatory, where, upon her death on May 21, 1911, she had just completed thirty years of service. These thirty years have covered a period of remarkable changes in the methods of attacking astronomical problems. The prism has revealed to us something of the nature of the heavenly bodies, and the photographic plate has made a permanent record of the condition of the sky, which may be studied at any time. Celestial photography was systematically undertaken at Harvard in 1882, by Professor E. C. PICKERING, the present director. The work was placed on a firm basis by the liberality of Mrs. DRAPER in establishing the Henry Draper Memorial, and in a short time photographs were being taken in large numbers. The Harvard photographic library now contains over two hundred thousand plates.

Mrs. FLEMING'S duties were to qualify these plates, superintend their care, examine them for peculiar objects, and make investigations by means of them. Each plate must be so indexed that it can be found at any time, and must be carefully handled and stored, being of fragile glass and without a duplicate. With a naturally clear and brilliant mind, Mrs. FLEMING at once evinced special aptitude for this photographic investigation, which was so novel that precedents could not be found for its execution, and, in return, the photographs proved to be veritable mines of wealth for the extraction of information concerning the sidereal universe. Most of Mrs. FLEMING'S discoveries were made from the spectrum plates, which are taken by means of a prism placed before the object-glass of the telescope, and which often show the spectra of several hundred stars. She examined with a magnifying glass all these plates taken at Cambridge and at the Harvard southern station in Arequipa, Peru, and marked all objects showing any peculiarities in their spectra. In this way, she found ten new stars and more than three hundred variable stars, because of the presence of bright lines in their spectra. She classified the spectra of 10,351 stars, which were published in 1890 in a volume of the *Harvard Annals,* called the "Draper Catalogue of Stellar Spectra." When stricken with the fatal illness, she was at work on a "Memoir on Peculiar Spectra," which will give useful tables and much additional information concerning many interesting celestial objects. Much of her time was always occupied by tedious work upon the proof of the numerous volumes of the *Annals* published by the observatory during the last twenty-five years. Her diligence and patience were combined with great self-reliance and courage. She was a member of the Astronomical and Astrophysical Society of America and the Astronomical Society of France. The British Royal Astronomical Society made her an honorary member in

1906, and soon after she was appointed honorary fellow in astronomy of Wellesly College. Only a few months ago the Astronomical Society of Mexico presented her with a gold medal for her discovery of new stars.

She left one son, EDWARD P. FLEMING, who graduated from the Massachusetts Institute of Technology in 1901, and is now a mining engineer in Chile.

Of a large-hearted, sympathetic nature, and keenly interested in all that pertains to life, she won friends easily, while her love of her home and unusual skill in needlework prove that a life spent in the routine of science need not destroy the attractive human element of a woman's nature.—ANNIE J. CANNON, in *Science,* June 30, 1911.

Notes from Science.—Professor E. C. PICKERING, director of the Harvard College Observatory, has been created knight of the Prussian order Pour le Mérite. SIMON NEWCOMB and ALEXANDER AGASSIZ are the only other American men of science on whom this honor has been conferred.

Wesleyan University has purchased ground from the Russell estate as a site for a new observatory, which will be erected from the proceeds of a fund given in 1903 by Mr. JOSEPH VAN VLECK. This gift has been increased by others, and now approaches $60,000.

Cambridge University has conferred its doctorate of science on Dr. GEORGE E. HALE, director of the Solar Observatory of Mount Wilson.

The old mounting of the 18½-inch equatorial of the Dearborn Observatory, which has done service for nearly half a century, has been replaced by an entirely new mounting from the firm of WARNER & SWASEY. Observations with the new instrument were begun on June 1st.

The Sproul Observatory was dedicated at Swarthmore College on June 6th. It has been presented by Senator WILLIAM C. SPROUL, as a memorial of the twentieth anniversary of the class of '91, of which he is a member. The exercises consisted of the address of presentation, in behalf of the class, by Congressman A. MITCHELL PALMER, '91; the unveiling of the tablet by Miss DOROTHY SPROUL, daughter of the donor; the speech of acceptance, by Dr. JOHN A. MILLER, professor of mathematics and astronomy; an address by Miss SUSAN J. CUNNINGHAM, formerly in charge of the same department, and a poem, "Watching the Stars," written for the occasion by J. RUSSELL HAYES. The new observatory is expected to be ready for use next fall. The telescope, the lens of which will have a diameter of 24 inches, will be one of the most effective on the Atlantic Coast.

Professor H. POINCARÉ, the eminent French mathematician, has notified Professor T. J. J. SEE, director of the Naval Observatory, Mare Island, California, that he made use of "Researches on the Evolution of the Stellar Systems," Vol. II, in his course this year at the Sorbonne, insisting especially on the capture of planets as satellites under the action of a resisting medium. The course of lectures is being published; and is to appear in November.

A New Element in the Sun.—At a meeting of the Royal Astronomical Society, held June 9th at Burlington House, London, Mr. F. W. DYSON, F. R. S., Astronomer-Royal, in the chair, a paper was contributed by Dr. ALEXANDER D. ROSS, F. R. A. S., of Glasgow University, on his detection of a new element (dysprosium) in the solar chromosphere. Dysprosium is one of the very rare elements, and, while its existence in terrestrial substances was suspected as early as 1886, it is only within the last few years that it has been isolated. Professor URBAIN, of Paris, was the first to obtain the substance in anything approaching a pure state, and even yet only a few grammes have been prepared. The mapping of the spark spectrum of this element was commenced by the author of the paper some time ago, the measurements being made with a 21-foot radius Rowland grating, ruled with 20,000 lines to the inch. The positions of several hundred lines have been measured in the spectrum and their wave-lengths calculated. On comparing the dysprosium lines with the lines in the solar flash spectrum photographed by Mr. DYSON during the solar eclipses of 1900 and 1901 at Ovar and Sumatra, Dr. Ross found a series of notable coincidences. Eight lines in the chromospheric spectrum had precisely the same positions as eight of the dysprosium lines, and a ninth strong spark line of the rare element was also probably present on the solar spectrograms. These nine lines are the chief lines of dysprosium, and the majority of them are considerably enhanced in passing from the arc to the spark. Dysprosium, therefore, obeys the same general rule as most other solar elements in that it is represented in the chromospheric spectrum mainly by its enhanced or strong spark lines. Of the thirty-two known substances in the chromosphere, only some five or six offer exceptions to this general rule. The detection of dysprosium in the Sun is further evidence of the marked dissimilarity which exists between solar and terrestrial materials. Thus, for example, while silicon and oxygen go to make up a large part of the Earth's bulk, they are either non-existent in the Sun or present in only very small quantity. On the other hand, we find in the Sun pronounced evidence of the occurrence of many elements, such as didymium, gadolinium, europium, and scandium, which are exceedingly rare in terrestrial minerals.—*Glasgow Herald,* June 10, 1911.

The Royal Observatory, Greenwich.—Mr. Dyson's first report—as Astronomer-Royal—was read at the annual meeting of the Board of Visitors held at Greenwich on June 2d, and covers the year ended May 10th. Below we give a brief summary.

The transit circle was employed for the usual observations and for the observation of stars of magnitude 9.0 and brighter between $+24°$ and $+32°$ north declination. The latter research, commenced in 1906 with the intention of securing five observations of each star, includes some 12,000 stars, and about 48 per cent of the observations were completed at the date of report.

From the transit-circle and altazimuth observations of the Moon's limb and Mösting A, made during 1909, the mean error of the Moon's tabular place was found to be -0.423^s in R. A. and $-0.53''$ in N. P. D.; from ninety-eight observations with the transit-circle, the mean error in right ascension, for 1910, was found to be -0.543^s.

A new mercury trough has been added to the altazimuth. It is carried on iron rails quite isolated from the floor, and the steadiness of the star images has become greatly improved.

Values for the Moon's parallax have been obtained from the Cape-Greenwich observations of Mösting A, made during 1905-10, and the probable error of the result, so far as it is independent of the Earth's ellipticity, is $\pm 0.06''$. For values of $1/e$ ranging from 293 to 300, the correction to Hansen's value of the parallax ranges from $+0.53''$ to $+0.12''$; the combined results give $+0.44''$ as the correction and 294.5 as the value of $1/e$.

Bi-monthly investigations of the R-D discordance revealed a nearly constant discordance, amounting to $1.14''$, in the yearly mean, which changes sign when the instrument is reversed, and although the object-glass has been remounted, the cause of this has not yet been discovered.

The mean error in right ascension of the Moon's tabular place for 1910 is -0.59^s from meridian observations of the limb and -0.55^s from those of Mösting A.

The reflex zenith tube observations for 1906-9, discussed by Mr. Eddington, give results in fair accordance, on the whole, with those published by Dr. Albrecht for the International Latitude Service.

About 600 double-star observations were made with the 28-inch refractor, including observations of 110 pairs under $0.5''$ separation and 153 pairs between $0.5''$ and $1.0''$.

In the 30-inch Thompson equatorial the mirror, last silvered in February, 1910, is still in good condition owing to the cover having been made air-tight by a band of pure rubber. This instrument was employed in photographing *Saturn* and its ninth satellite, Comets *c* 1909, *b* 1910 and *e* 1910, and some of Herschel's nebulæ, the latter for identification and position determination.

The 26-inch refractor was chiefly employed in the photographic determination of the parallaxes of stars in the Greenwich astrographic zone, KAPTEYN's method of exposures on the same plate at intervals of six months being followed.

As the southern declination of *Jupiter* made observations at Greenwich impossible, the director of the Helwan Observatory undertook to continue the observations of *J viii,* and eight photographs, taken on eight nights, have already been received at Greenwich for measurement. Approximate measures of the first two photographs of the satellite indicate that the Cowell-Crommelin ephemeris is only 20″ in error.

Since November, the Greenwich astrographic telescope has been employed in the photographic determination of the magnitudes of stars given in the two published volumes of the Greenwich zones, Pickering's plan of polar sequences being employed.

An interesting investigation now being carried out at the observatory is the enumeration of the stars of different magnitudes on the photographs of the whole sky taken by Mr. FRANKLIN-ADAMS, who is bearing the cost. Twenty-six plates, covering the sky between the North Pole and + 53°, have been dealt with, and 42,284 stars counted. The greatest number counted on any one plate (in twenty-five 20′ squares) was 5,138, the least 301.

The Dallmeyer photoheliograph is now housed in the dome of the old altazimuth, where one quarter of the original dome was cut away and a corresponding sector fixed permanently in the north, so that the large dome-aperture thus secured is easily closed by bringing it under the fixed sector. For 1910 the solar photograph record is complete, the ninety gaps in the combined Greenwich and Cape series having been filled by photographs received from the Dehra Dûn and Kodaikânal observatories in India. Since the beginning of May one of the photoheliograph observers has attended from 7 to 9 A. M., thus adding two hours to the period of observation, and also securing better results.

The mean daily spotted area of the Sun's disc in 1910 was less than half that of 1909, and during the five months ended March 31, 1911, the disc was free from spots on sixty-seven days. During the rapidly approaching minimum the direction of the Sun's axis is to be determined from the thirty-seven years' observations now available.

The principal results for the magnetic elements in 1910 were:—

Mean declination	15° 41″.2 west
Mean horizontal force	0.18532 (C.G.S. units)
Mean dip (with 3-inch needles)	66° 52′ 37″

There were no days of "great," and only six of "lesser," magnetic disturbances.

The mean temperature for 1910, 49°.7, was 0°.1 above the 1841-95 average, but the sunshine recorder showed a deficiency; July provided only about half the average number of hours of bright sunshine, and May was the only month when the amount was appreciably above the average. The rainfall, 25.93 inches, was 1.81 inches in excess of the 1841-95 average, and the number of "rainy days" was 175.

In the time department, the performance of chronometers is reported as satisfactory, and that of chronometer watches as exceptionally good. The increase of electrical devices on board ships having made the question of magnetic disturbance of chronometers an urgent one, special experiments are being carried out with strong magnetic fields at the observatory.—*Nature,* June 8, 1911.